

Johnius (Johnius) laevis, a New Sciaenid from Northern Australia and Papua New Guinea

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Abstract A new sciaenid, *Johnius (Johnius) laevis*, is described from northern Australia and Papua New Guinea. Amongst the *Johnius (Johnius)* species with no mental barbel, ctenoid body scales, and more than 10 lower gill rakers, the new species is distinguished by the combination of the following characters: dorsal soft rays 29–34; scales above the lateral line 5–6, and below 8–10; eye diameter 22.4–30% HL; interorbital width 24.6–29.8% HL; and body scales with weakly developed ctenii.

The Indo-West Pacific sciaenid genus *Johnius* was reviewed by Trewavas (1977) who divided the genus into two subgenera, *Johnius* and *Johnieops*. The former differs from the latter chiefly in the absence of enlarged teeth in a single row on the lower jaw. By following Trewavas' analytical key to the *J. (Johnius)* species, one identifies specimens with no mental barbel, ctenoid body scales, and more than 10 lower gill rakers as either *J. coitor* (Hamilton, 1822) or *J. hypostoma* (Bleeker, 1853). However, recent studies (Mohan, 1983, 1984; Sasaki, 1990) have shown that *J. carouna* (Cuvier, 1830), *J. grypotus* (Richardson, 1846), and *J. glaucus* (Day, 1876) also fall into this group. In this paper, we add another from northern Australia and Papua New Guinea. The new species described here was reported as *J. coitor* by Gloerfelt-Tarp and Kailola (1984), Sainsbury et al. (1985), and Kailola (1988).

Counts and measurements follow Sasaki and Kailola (1988). Selected head length and body proportions are given to enable direct comparison with Trewavas (1977). Institutional abbreviations follow Leviton et al. (1985). Standard length and head length are expressed as SL and HL, respectively. Counts and measurements of the paratypes are given in parenthesis when different from those of the holotype.

Johnius (Johnius) laevis sp. nov.
(Figs. 1–3)

Johnius coitor (not of Hamilton, 1822): Gloerfelt-Tarp and Kailola, 1984: 208, col. pl. 209, 342 ("south of Sumatra and Java"—see distribution section below; northwestern

Australia); Sainsbury, Kailola and Leyland, 1985: 232, 233, col. pl. 343 (northern Australia).

Johnius (Johnius) sp. cf. *coitor* (not of Hamilton, 1822): Kailola, 1988: 319 (Gulf of Papua and off Fly River, Papua New Guinea).

Holotype. NTM S. 11452-012, 117.0 mm SL, off Port Essington (11°07'S, 131°44'E), Northern Territory, 45 m, 3 March 1984.

Paratypes. AMS I. 20402-023, 113.0 mm SL, Bonaparte Archipelago, Camden Sound (14°00'S, 124°45'E), Western Australia, 12–60 m, April 1978; AMS I. 21632-002, 123.3 mm SL, off Cape Rulhieres (14°05'S, 127°45'E), 52 m, Western Australia, 1 July 1979; CSIRO A. 3131, 77.4 mm SL, mouth of Fly River, Papua New Guinea, 6 April 1955; CSIRO CA. 2797, 109.0 mm SL, Clarence Strait (11°04'S, 131°18'E to 11°03'S, 131°17'E), 36–37 m, Northern Territory, 6 June 1980, CSIRO Research Vessel "Soela"; NTM S. 11452-002, 28 specimens, 81.6–135.2 mm SL, collected with the holotype.

Diagnosis. A species of *Johnius (Johnius)* with the following combination of characters and body proportions: dorsal soft rays 29–34; anal soft rays 7; scales above lateral line 5–6, and below 8–10; gill rakers 5–7+1+10–12; vertebrae 25, last well developed pleural rib on 10th vertebra; swimbladder appendages 11–14; HL 29.9–33.8% SL; eye diameter 7.1–9.6% SL (22.4–30.0% HL); interorbital width 7.8–9.3% SL (24.6–29.8% HL); scales on body ctenoid, ctenii weakly developed and body smooth to touch.

Description. Dorsal rays X+I, 32 (usually X+I, XI+I in one; 29–34, 29 in three, 30 in four, 31 in seven, 32 in 13, 33 in three, 34 in two); anal rays II, 7; pectoral rays 20 (17 in three, 18 in 13, 19 in 14, uncountable in two); lateral line scales 48 (47–49);

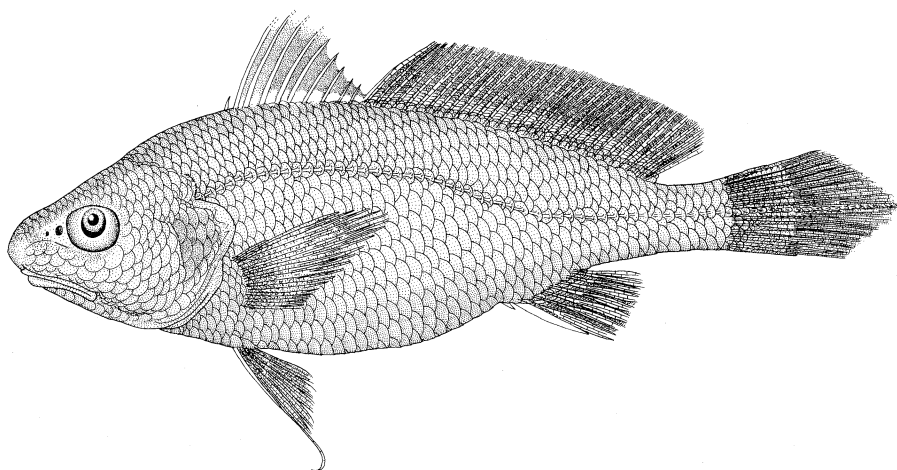


Fig. 1. *Johnius (Johnius) laevis* sp. nov., holotype, NTM S. 11452-012, 117 mm SL.

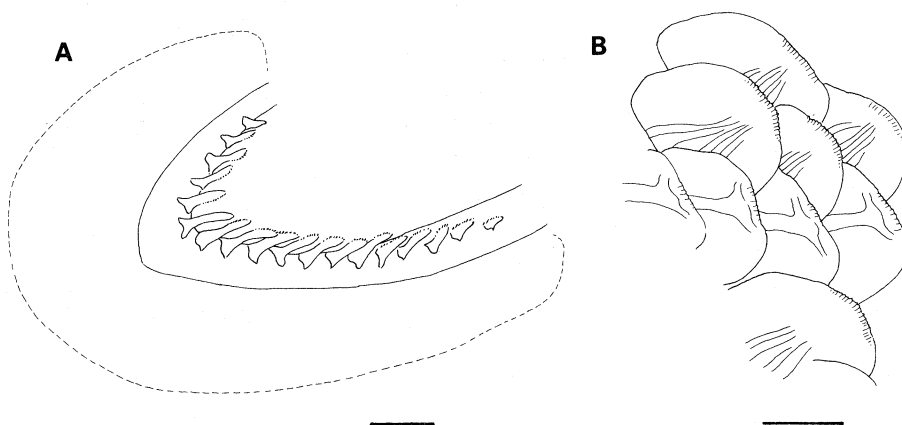


Fig. 2. First gill arch (A) and scales (B) of *Johnius (Johnius) laevis* sp. nov. A, paratype, NTM S. 11452-002; B, holotype, NTM S. 11452-012. Bar = 2 mm.

scales above lateral line 6 (5–6), and below 9 (8–10); gill rakers 5 + 1 + 12 (5–7 + 1 + 10–12); vertebrae 10 + 15, last well-developed pleural rib on 10th vertebra (one paratype with a rudimentary rib on 11th), first anal proximal radial between 10th and 11th vertebrae; swimbladder appendages 11–14 (in six paratypes). Proportions as % SL: HL 31.5 (29.9–33.8); body depth 30.8 (27.2–34.2); body width 17.0 (12.7–19.5); caudal peduncle length 23.8 (20.9–25.6); caudal peduncle depth 8.2 (7.7–9.7); snout length 9.8 (7.5–10.3); eye diameter 7.4 (7.1–9.6); interorbital width 8.6 (7.8–9.3); upper jaw length 11.3 (10.2–12.4); lower jaw length 12.6 (11.6–13.3); pectoral fin length 22.3 (19.9–24.0); pelvic fin length 17.9 (15.9–19.9); second dorsal spine length—(spine

broken) (11.0–15.0); third dorsal spine—(broken) (12.3–14.2); fourth dorsal spine—(broken) (11.5–13.7); fifth dorsal spine—(broken) (9.8–12.9); second anal spine length 11.8 (9.7–15.9); gill raker length 1.7 (1.5–2.8); gill filament length 4.0 (2.9–4.0). Proportions as % HL: snout length 31.3 (24.3–31.6); eye diameter 23.4 (22.4–30.0); interorbital width 27.4 (24.6–29.8); upper jaw length 35.9 (31.3–39.3); lower jaw length 39.9 (36.7–43.1); second anal spine length 37.5 (29.3–51.5); gill raker length 5.4 (4.6–9.2); gill filament length 12.8 (9.3–12.9). Proportions as % eye diameter: gill raker length 23.3 (20.2–34.9); gill filament length 54.3 (32.1–50.0).

Body moderately deep, dorsal and ventral profiles evenly rounded. Snout pointed, projecting well

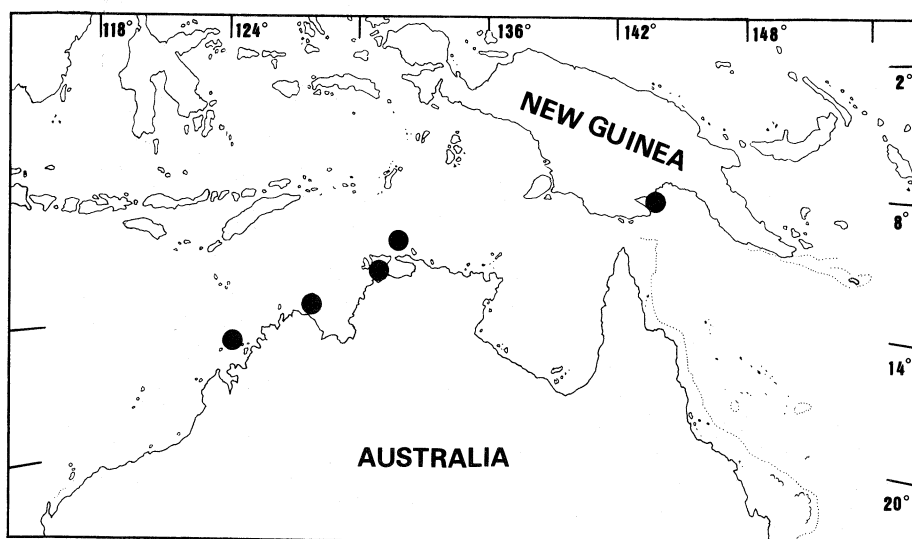


Fig. 3. Distribution of *Johnius (Johnius) laevis* sp. nov.

before upper jaw.

Five upper and five marginal snout pores, rostral fold deeply notched. Three pairs of mental pores, anterior pair with a common opening. No mental barbel. In upper jaw, a single, outer row of closely spaced enlarged teeth, and an inner band of small, conical teeth, comprising five or six anterior and three or four posterior rows. Lower jaw with a broad band of uniformly small, conical teeth, comprising eight anterior and four posterior rows.

Eye large, slightly elliptical. Anterior and posterior nostrils ovate, just before eye. Gill rakers short and slender (Fig. 2A); gill filaments approximately 2.5 times longer than gill rakers adjacent gill arch angle.

Scales rather large, cycloid on head (except on occiput), throat, membrane of soft dorsal, anal, and caudal fins; weakly ctenoid on other parts of body; ctenii on body scales poorly developed or often absent, and having only radiated marginal grooves (Fig. 2B), giving a smooth touch.

Third or fourth dorsal spine longest. First soft ray of pelvic fin with short filament. Second anal spine moderately strong, its length about 2/3 of first anal soft ray. Caudal fin rhomboidal, tip pointed.

Swimbladder hammer-shaped, with a number of arborescent appendages along entire lateral surface. Sagitta typically Johniine pattern (Trewavas, 1977). Drumming muscle always present in males, present or absent in females.

Table 1. Selected diagnostic characters of *Johnius (Johnius) laevis* sp. nov. and related species.

	<i>laevis</i> sp. nov.	<i>coitor</i>	<i>carouna</i>	<i>grypotus</i>	<i>hypostoma</i>	<i>glaucus</i>
Dorsal soft rays	29–34	25–28	27–29	24–28	31–33	29–30
Anal soft rays	7	7	7	8 (rarely 7 or 9)	7–8	7
Scales above and below lateral line	above 5–6 below 8–10	7–9 11–14	5 9–12	7–9 ca. 12–ca. 17	5–6 no data	8 11
Vertebrae (pleural rib present + absent)	10+15	10+16 or 11+15	10+15	10+15	11+14 or 12+13	10+15
Swimbladder appendages	11–14	10–13	15	11–15	9	no data
HL (% SL)	29.9–33.8	28.1–31.1	27.1–31.5	27.5–31.6	28.3–28.6	27.4–28.9
Eye diameter (% HL)	22.4–30.0	16.3–23.5	18.4–25.9	23.8–30.6	20.2–22.2	23.9–24.9
Interorbital width (% HL)	24.6–29.8	22.1–28.2	22.9–30.0	28.4–34.0	29.8–34.0	24.1–26.6
Ctenii on scales	poorly developed	well developed	well developed	well developed	well developed	well developed

Colour in preservative: dark mottled pattern on back and flanks, creamy white on lower sides and below. Broad, dark margin to scale pockets on dorsal and lateral side of head and body. Mouth lining pale except palate dark brown. Operculum appears dark owing to densely pigmented branchial cavity. Peritoneum densely pigmented brown. Spinous dorsal black, soft dorsal dark grey, both with pale basal quarter; pectoral grey; pelvic slightly mottled distally; anal grey; caudal grey, dark distally. Colour when fresh (after Gloerfelt-Tarp and Kailola, 1984): head and upper body iridescent mauve or bronze, lower part of body silvery-white, dusky blotch on operculum; fins yellow, black margins to dorsal and caudal fins.

Comparisons. *Johnius laevis* resembles *J. coitor* (Hamilton) (type locality: India), *J. carouna* (Cuvier) (India), *J. grypotus* (Richardson) (China), *J. hypostoma* (Bleeker) (Sumatra), and *J. glaucus* (Day) (India) in having no mental barbel(s), ctenoid scales, and more than 10 lower gill rakers (Table 1). However, it differs from all of them in having poorly developed ctenii on the body scales (well developed ctenii in other five species; scale condition of *J. hypostoma* was informed by M. van Oijen, RMNH). Furthermore, *J. laevis* is distinguished from the former three in its higher dorsal soft ray count (29–34 vs. 25–28 in *coitor*, 27–29 in *carouna*, 24–28 in *grypotus* (Trewavas, 1977; Mohan, 1984; Sasaki, 1990; pers. obs.)).

Other available characters for separation of the new species from *J. coitor* and *J. grypotus* include: number of anal soft rays (7 vs. usually 8 in *grypotus* (Sasaki, 1990)); number of vertebrae (25 vs. 26 in *coitor* (Sasaki, 1990)); and number of scales above and below lateral line (5–6 and 8–10 vs. more than 7 above and more than 11 below, in *coitor* and *grypotus* (Sasaki, 1990; pers. obs.)).

Although the new species resembles *Johnius hypostoma* and *J. glaucus* in its higher dorsal soft ray count (cf. 31–33 in *hypostoma* and 29–30 in *glaucus* (Trewavas, 1977; pers. obs.)), it is otherwise distinguished in scale morphology.

Johnius hypostoma, known only from five, small (72–84 mm SL) type specimens from west coast of Sumatra and redescribed by Trewavas (1977), differs from the new species in having last well-developed pleural rib on 11th or 12th vertebra (vs. 10th in *laevis*), nine pairs of swimbladder appendages (vs. 11–14), shorter head (28.3–28.6% SL vs. 29.9–33.8), smaller eye (20.2–22.2% HL vs. 22.4–30.0—rela-

tively larger eye in small individuals), and wider interorbital space (29.8–34.0% HL vs. 24.6–29.8) (all *hypostoma* data from Trewavas, 1977).

Although Trewavas (1977) treated *Johnius glaucus* (Day) (type locality: India) as a doubtful species, Mohan (1983) and Sasaki (1990) considered *glaucus* to be a valid *J. (Johnius)* species. Our concept of this species is based upon two, well preserved syntypes (AMS B. 8236, AMS B. 8237). Although *J. glaucus* resembles the new species in dorsal soft ray and lower gill raker counts, the former differs from the latter in having a few more scales (8 above, 11 below the lateral line vs. 5–6, 8–10, respectively).

Distribution. Along coasts of Australia and southern Papua New Guinea, from about 124° to 144°E (Fig. 3). This species is probably restricted to Australia and New Guinea. Although Gloerfelt-Tarp and Kailola (1984) included Java and Sumatra (their Area A) as the range of this species, they retained no specimens from that region. Based on our current knowledge of *Johnius (Johnius)*, we suspect that the record from the region are more likely referable to other related species.

Etymology. The specific name is derived from *laevis* (L.), smooth, in reference to the smooth touch of body in this species.

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- 北部オーストラリアとバブア・ニューギニアから得られたコニベ属(コニベ亜属)の1新種
- 佐々木邦夫・Patricia J. Kailola
- ニベ科コニベ属(コニベ亜属)の1新種, *Johnius (Johnius) laevis*, を北部オーストラリアとバブア・ニューギニア沿岸で採集された標本に基づき記載した。本種は顎鬚がなく、櫛鱗をこむり、そして10本以上の下枝鰓耙をもつ点で類似する同亜属の他種から、背鰭軟条が29-34本、側線より上方の鱗が5-6枚、下方の鱗が8-10枚、眼径が頭長の22.4-30%、両眼間隔が頭長の24.6-29.8%、および鱗の後縁に発達した悪い小棘をもつなどの特徴によって識別される。
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